CLAIMS:

The invention claimed is:

1. A method of depositing an elemental silicon-comprising material over a semiconductor substrate, comprising:

positioning a semiconductor substrate within a chamber for deposition, the chamber comprising an infrared radiation transparent wall;

depositing an elemental silicon-comprising material on the semiconductor substrate; during said depositing, forming a deposit on the infrared radiation transparent wall within the chamber; and

after said depositing, generating a plasma within the chamber with a cleaning gas from at least one plasma generating electrode received external of the chamber proximate the infrared radiation transparent wall effective to remove at least some of the deposit from the infrared radiation transparent wall within the chamber.

2. The method of claim 1 comprising multiple infrared radiation transparent walls, each of said walls having at least one plasma generating electrode received external of the chamber proximate thereto and from which plasma in generated during said generating.

3. The method of claim 1 wherein the elemental silicon-comprising material is crystalline.

4. The method of claim 3 wherein the elemental silicon-comprising material comprises selectively deposited epitaxial silicon.

5. The method of claim 4 the selectively deposited epitaxial silicon comprises Ge.

6. The method of claim 1 wherein the deposit comprises silicon.

7. The method of claim 1 wherein the deposit comprises a polymer.

8. The method of claim 7 wherein the deposit comprises silicon.

9. The method of claim 1 wherein the generating removes all of the deposit.

10. The method of claim 1 wherein the generating occurs while no semiconductor substrate is in the chamber.

11. The method of claim 1 wherein the cleaning gas comprises a halogen.

12. The method of claim 11 wherein the halogen comprises chlorine.

13. The method of claim 12 wherein the cleaning gas comprises Cl_2.

14. The method of claim 12 wherein the cleaning gas comprises Cl_2 and H_2.

15. The method of claim 12 wherein the cleaning gas comprises Cl_2, H_2, and Ar.

16. The method of claim 11 wherein the halogen comprises fluorine.

17. The method of claim 16 wherein the cleaning gas comprises NF_3.

18. The method of claim 16 wherein the cleaning gas comprises NF_3 and H_2.

19. The method of claim 16 wherein the cleaning gas comprises NF_3, H_2, and Ar.

20. The method of claim 1 comprising rotating the semiconductor substrate during the depositing.

21. The method of claim 1 wherein no plasma is generated during the depositing.

22. The method of claim 1 wherein plasma is generated during the depositing.

23. The method of claim 22 wherein the plasma generated during the depositing is not generated with said plasma generated electrode received external of the chamber proximate the infrared radiation transparent wall.

24. A method of depositing an elemental silicon-comprising material over a semiconductor substrate, comprising:

positioning a semiconductor substrate within a chamber for deposition, the chamber comprising an infrared radiation transparent wall through which heat flows to the substrate from at least one lamp received external of the chamber;

depositing an elemental silicon-comprising material on the semiconductor substrate using the at least one lamp received external of the chamber as a heat source; during said depositing, forming a deposit on the infrared radiation transparent wall within the chamber; and

after said depositing, generating a plasma within the chamber with a cleaning gas from at least one plasma generating electrode received external of the chamber proximate the infrared radiation transparent wall effective to remove at least some of the deposit from the infrared radiation transparent wall within the chamber.

25. The method of claim 24 comprising during said depositing, detecting substrate temperature by measuring emissivity through the infrared radiation transparent wall using a non-contacting emissivity sensor.

26. The method of claim 24 comprising multiple infrared radiation transparent walls, each of said walls having at least one plasma generating electrode received external of the chamber proximate thereto and from which plasma in generated during said generating.

27. The method of claim 26 wherein each of said walls has at least one lamp received external of the chamber which is used during the depositing as a heat source.

28. The method of claim 24 wherein the at least one plasma generating electrode is received intermediate the infrared transparent wall and the at least one lamp.

29. The method of claim 24 wherein the elemental silicon-comprising material comprises selectively deposited epitaxial silicon.

30. The method of claim 24 wherein the deposit comprises silicon.

31. The method of claim 24 wherein the deposit comprises a polymer.

32. The method of claim 31 wherein the deposit comprises silicon.

33. The method of claim 24 wherein the generating removes all of the deposit.

34. The method of claim 24 wherein the generating occurs while no semiconductor substrate is in the chamber.

35. The method of claim 24 wherein the cleaning gas comprises a halogen.

36. The method of claim 35 wherein the halogen comprises chlorine.

37. The method of claim 36 wherein the cleaning gas comprises Cl_2.

38. The method of claim 35 wherein the halogen comprises fluorine.

39. The method of claim 38 wherein the cleaning gas comprises NF_3.

40. The method of claim 24 wherein no plasma is generated during the depositing.

41. The method of claim 24 wherein plasma is generated during the depositing.

42. The method of claim 41 wherein the plasma generated during the depositing is not generated with said plasma generated electrode received external of the chamber proximate the infrared radiation transparent wall.

43. A method of depositing an elemental silicon-comprising material over a semiconductor substrate, comprising:

positioning a semiconductor substrate within a chamber for deposition, the chamber comprising first and second infrared radiation transparent walls, heat flowing to the substrate through the first infrared radiation transparent wall from at least one lamp received external of the chamber;

depositing an elemental silicon-comprising material on the semiconductor substrate using the at least one lamp received external of the chamber as a heat source;

during said depositing, detecting substrate temperature by measuring emissivity through the second infrared radiation transparent wall using a non-contacting emissivity sensor;

during said depositing, forming a deposit on the second infrared radiation transparent wall within the chamber; and

after said depositing, generating a plasma within the chamber with a cleaning gas from at least one plasma generating electrode received external of the chamber proximate the second infrared radiation transparent wall effective to remove at least some of the deposit from the second infrared radiation transparent wall within the chamber.

44. The method of claim 43 wherein the first infrared radiation transparent wall is received below the positioned substrate.

45. The method of claim 43 wherein the second infrared radiation transparent wall is received above the positioned substrate.

46. The method of claim 43 wherein no heating lamp is received external of the chamber which directs heat to the second infrared radiation transparent wall during said depositing.

47. The method of claim 43 wherein at least one heating lamp is received external of the chamber for directing heat to the second infrared radiation transparent wall.

48. The method of claim 47 wherein the at least one heating lamp for directing heat to the second infrared radiation transparent wall is used during said depositing to flow heat to the substrate through the second infrared radiation transparent wall.

49. The method of claim 43 wherein no heating lamp is used during said depositing to flow heat to the substrate through the second infrared radiation transparent wall.

50. The method of claim 43 wherein,

during said depositing, forming a deposit on the first infrared radiation transparent wall within the chamber; and

at least one plasma generating electrode is received external of the chamber proximate the first infrared radiation transparent wall and from which plasma in generated during said generating and being effective to remove at least some of the deposit from the first infrared radiation transparent wall within the chamber.

51. The method of claim 43 wherein the elemental silicon-comprising material comprises selectively deposited epitaxial silicon.

52. The method of claim 43 wherein the deposit comprises silicon.

53. The method of claim 43 wherein the deposit comprises a polymer.

54. The method of claim 53 wherein the deposit comprises silicon.

55. The method of claim 43 wherein the generating removes all of the deposit.

56. The method of claim 43 wherein the generating occurs while no semiconductor substrate is in the chamber.

57. The method of claim 43 wherein the cleaning gas comprises a halogen.

58. The method of claim 57 wherein the halogen comprises chlorine.

59. The method of claim 58 wherein the cleaning gas comprises Cl_2.

60. The method of claim 57 wherein the halogen comprises fluorine.

61. The method of claim 60 wherein the cleaning gas comprises NF_3.

62. A method of cleaning an internal wall of a chamber, comprising:

providing at least one plasma generating electrode external of a deposition chamber proximate a chamber wall, the chamber wall being transparent to infrared radiation; and

generating a plasma within the chamber with a cleaning gas from the at least one plasma generating electrode received external of the chamber effective to remove at least some of a deposit from the infrared radiation transparent wall within the chamber.

63. The method of claim 62 wherein the deposit comprises a polymer.

64. The method of claim 63 wherein the deposit comprises silicon.

65. The method of claim 62 wherein the generating removes all of the deposit.

66. The method of claim 62 wherein the generating occurs while no semiconductor substrate is in the chamber.

67. The method of claim 62 wherein the cleaning gas comprises a halogen.

68. The method of claim 67 wherein the halogen comprises chlorine.

69. The method of claim 68 wherein the cleaning gas comprises Cl_2.

70. The method of claim 68 wherein the cleaning gas comprises Cl_2 and H_2.

71. The method of claim 68 wherein the cleaning gas comprises Cl_2, H_2, and Ar.

72. The method of claim 67 wherein the halogen comprises fluorine.

73. The method of claim 72 wherein the cleaning gas comprises NF_3.

74. The method of claim 72 wherein the cleaning gas comprises NF_3 and H_2.

75. The method of claim 72 wherein the cleaning gas comprises NF_3, H_2, and Ar.

76. A method of depositing an elemental silicon-comprising material over a semiconductor substrate, comprising:

positioning a semiconductor substrate within a deposition chamber for deposition of an elemental silicon-comprising material thereon;

feeding a cleaning gas to within the deposition chamber effective to remove at least some of any native oxide formed on the semiconductor substrate; and

after the feeding, depositing an elemental silicon-comprising material on the semiconductor substrate within the deposition chamber.

77. The method of claim 76 wherein the elemental silicon-comprising material is crystalline.

78. The method of claim 77 wherein the elemental silicon-comprising material comprises selectively deposited epitaxial silicon.

79. The method of claim 78 the selectively deposited epitaxial silicon comprises Ge.

80. The method of claim 76 wherein the cleaning gas comprises a halogen.

81. The method of claim 80 wherein the halogen comprises chlorine.

82. The method of claim 81 wherein the cleaning gas comprises HCl.

83. The method of claim 80 wherein the halogen comprises fluorine.

84. The method of claim 83 wherein the cleaning gas comprises HF.

85. The method of claim 83 wherein the cleaning gas comprises NF_3.

86. The method of claim 83 wherein the cleaning gas comprises ClF_3.

87. The method of claim 76 wherein the cleaning gas comprises a buffer to rate of oxide removal.

88. The method of claim 87 wherein the buffer comprises a carboxylic acid.

89. The method of claim 88 wherein the carboxylic acid contains only a single carboxylic group.

90. The method of claim 89 wherein the carboxylic acid comprises acetic acid.

91. The method of claim 89 wherein the carboxylic acid comprises $C_xH_{2x+1}COOH$, where "x" is greater than or equal to 2.

92. The method of claim 76 wherein temperature of the semiconductor substrate during the feeding is from about 20°C to about 800°C.

93. The method of claim 76 wherein pressure within the deposition chamber is atmospheric during the feeding.

94. The method of claim 76 wherein pressure within the deposition chamber is subatmospheric during the feeding.

95. The method of claim 76 wherein native oxide is formed on the semiconductor substrate prior to the feeding, and at least some of which is removed by the feeding.

96. The method of claim 95 wherein said native oxide is outwardly exposed, the feeding removing all such exposed native oxide.

97. The method of claim 95 wherein said native oxide is formed on the semiconductor substrate prior to the positioning.

98. A method of depositing an elemental silicon-comprising material over a semiconductor substrate, comprising:

providing a semiconductor substrate within a cleaning chamber;

feeding a cleaning gas to within the cleaning chamber effective to remove at least some of any native oxide formed on the semiconductor substrate;

after the feeding, moving the semiconductor substrate from the cleaning chamber through a transfer chamber to a deposition chamber for deposition of an elemental silicon-comprising material thereon, said moving occurring within an atmosphere inert to oxidation of the semiconductor substrate; and

after the moving, depositing an elemental silicon-comprising material on the semiconductor substrate within the deposition chamber.